comprising Bi, the semiconductor device having a lead made of Cu or a Cu alloy on which an Sn-Bi alloy plating layer comprising about 1 to about 20 wt% Bi is formed as a surface layer without any other plating under-layer.

16. An electronic device according to claim 15, wherein the Pb-free solder comprising Bi is an Sn-Ag-Bi alloy.

17. An electronic device according to claim 16, wherein the Pb-free solder provides connection between said lead and said substrate, via said Sn-Bi alloy layer.

18. An electronic device according to claim 15, wherein the Pb-free solder provides connection between said lead and said substrate, via said Sn-Bi alloy layer.

19. An electronic device comprising a substrate and a semiconductor device, which are connected with each other by means of a Pb-free solder comprising Bi, the semiconductor device having a lead made of an Fe-Ni alloy on which an Sn-Bi alloy plating layer comprising 1 to 20 wt% Bi is formed as a surface layer.

20. An electronic device according to claim 19, wherein the Pb-free solder comprising Bi is an Sn-Ag-Bi alloy.

21. An electronic device according to claim 19, wherein the lead is a TSOP lead.

22. An electronic device according to claim 21, wherein the Pb-free solder provides connection between said TSOP lead and said substrate, via said Sn-Bi alloy layer.

23. An electronic device according to claim 19, wherein the Pb-free solder provides connection between said lead and said substrate, via said Sn-Bi alloy layer.

24. An electronic device comprising a substrate and a semiconductor device, which are connected with each other by means of a Pb-free solder comprising Bi, the semiconductor device having a lead made of an Fe-Ni alloy on which an Sn-Bi alloy layer comprising about 1 to about 20 wt% Bi is directly formed as a surface layer.

25. An electronic device according to claim 24, wherein the Pb-free solder comprising Bi is an Sn-Ag-Bi alloy.

26. An electronic device according to claim 25, wherein the Pb-free solder provides connection between said lead and said substrate, via said Sn-Bi alloy layer.

27. An electronic device according to claim 24, wherein the Pb-free solder provides connection between said lead and said substrate, via said Sn-Bi alloy layer.

28. A semiconductor device with a lead, wherein an Sn-Bi alloy layer, which comprises from 1 to 20 wt% of Bi, is formed on the lead.

29. A semiconductor device according to claim 28, wherein the lead is a TSOP lead.